

Modeling Project

The reason why: By the end of this project you will have

- experience examining real world data with topological tools,
- applied modeling approaches to try and solve a problem,
- practiced presenting technical information, and
- developed technical writing for scientific posters.

Beginning in week five, the class will focus on a modeling project. The project will center on solving a problem using modeling techniques that ideally involve topological ideas such as graphs or the Kepler Mapper algorithm. The project requires the completion of a poster and brief presentation, both of which will be presented in class June 1st or/and at SAMURS on June 8th.

Expectations for the final Modeling Project:

- Each group will be comprised of two to three students.
- Multiple projects can work with the same data and on the same problem.
- Problem, methods, and results should be written for an audience that has taken Calculus 2 and no more.
- You are allowed to consult with the Internet, colleagues in the class, or faculty. Do remember though, this exercise is *not* about interpreting someone else's research but rather building your own! Significant work should be your own group's.
- A poster explaining your model will be presented.

Poster Specifications:

- Must include: Title, Group Member Names, Class, UWT, Citations
- Must include: Statement of the Problem, Description of the Model, Validation Tests, any results (interesting or otherwise)
- Should have a good balance of graphics to words (60-40ish).
- Should be 42" by 34"
- Can have a laptop near by running a program if appropriate.
- Some possible resources:
 - <https://www.washington.edu/brand/templates/research-posters/>
 - posters hanging in the Science Building!

Note that the Science and Mathematics (SAM) Division has a colored poster printer that we can use for this class for free. If you would like to use it I'll need your poster files by Monday June 5th. Files must be less than 2MB and can be any of the following types: gif, jpg, jpeg, png, dox, docx, ppt, pptx, mp3. I will be printing the files Tuesday June 6th starting at 10:30am.

Presentation Specifications:

- At least one group member must be available during the poster session in SAMURS between 10:10am and 12:10pm (the scheduled final exam session for the class)
- Every group member contributes during the poster session or take a leading role the previous week during the practice.
- A short & interesting description or “elevator speech” should be prepared to give to folks who seem interested.

General Timeline:

- Week 5:
 - Brainstorm project topics in light of the 5th Math Major SLO
 - Complete introductory Kepler Mapper Lab (Lab 3)
 - Begin Data Reading Lab (Lab 4)
 - Begin looking for data related to project ideas (HW6)
- Week 6:
 - Identify potential data and problems for project (HW6)
 - Complete Data Reading Lab (Lab 4)
 - Determine who will be in groups together for the project (HW6)
 - Begin loading data into Jupyter Notebook (Project Lab 2)
- Week 7:
 - Data and problems reported (HW6)
 - Group report-outs and discussions
 - Project Lab 1 (loading data with 1 visualization) Due
- Week 8:
 - Peer Review of Jupyter Notebooks
 - Project Lab 2 (visualizing results) Due
- Week 9:
 - Graded Poster Draft Due
 - Project Lab 3 (validating results) Due
- Week 10:
 - Talking points due (HW7)
 - Practice Poster Session
 - Poster Due if SAM division prints
- Week 11:
 - SAMURS Poster session
 - Group self reviews due